CLAIMS

We claim:

1. A microelectromechanical positioner, comprising:

a substrate;

a moveable platform; and

at least one linkage mechanism having a plurality of links, wherein the linkage mechanism is pivotably attached to the substrate by at least two anchor links and pivotably attached to the moveable platform by at least two platform links, and whereby the platform is constrained to exhibit substantially translational movement in a plane.

2. A microelectromechanical positioner, comprising:

a substrate;

a moveable platform;

at least one linkage mechanism having a plurality of links, wherein the linkage mechanism is pivotably attached to the substrate by at least two anchor links and pivotably attached to the moveable platform by at least two platform links, and whereby the platform is constrained to exhibit substantially translational movement in a plane; and

at least one actuator operatively connected to provide movement thereof to at least one of the group consisting of a linkage mechanism, an anchor link, a platform link, and the platform.

3. The microelectromechanical positioner of Claim 1 or 2, wherein each link of the linkage is pivotably attached to another link by a pin joint or flexural hinge.

4. The microelectromechanical positioner of Claim 1 or 2, wherein the at least one linkage mechanism comprises a parallelogram linkage.

5. The microelectromechanical positioner of Claim 1 or 2, wherein the substrate comprises silicon.

6. The microelectromechanical positioner of Claim 1 or 2, wherein the platform comprises polycrystalline or monocrystalline silicon.

7. The microelectromechanical positioner of Claim 1 or 2, wherein each linkage mechanism comprises polycrystalline silicon or silicon nitride.

8. The microelectromechanical positioner of Claim 2, wherein the actuator is selected from the group consisting of electrostatic actuators, electromagnetic actuators, piezoelectric actuators, and thermal actuators.

9. The microelectromechanical positioner of Claim 8, wherein the at least one actuator comprises a rotary actuator operatively connected to at least one anchor link to provide motion thereto.

10. The microelectromechanical positioner of Claim 9, wherein the rotary actuator comprises an electrostatic actuator.

11. The microelectromechanical positioner of Claim 2, further comprising at least one spring operatively connected to the platform to restore the platform to a rest position in the absence of actuation of the actuator.

12. The microelectromechanical positioner of Claim 1 or 2, wherein the positioner exhibits at least one resonant frequency.

13. The microelectromechanical positioner of Claim 1 or 2, wherein the platform exhibits at least one degree of freedom of motion.

14. The microelectromechanical positioner of Claim 1 or 2, wherein the platform alters the properties of electromagnetic energy impinging thereon.

15. The microelectromechanical positioner of Claim 1 or 2, wherein the movement of the platform is controlled with an open-loop controller.